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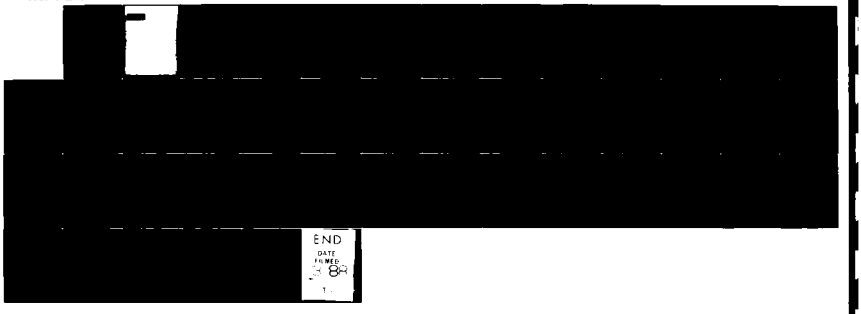

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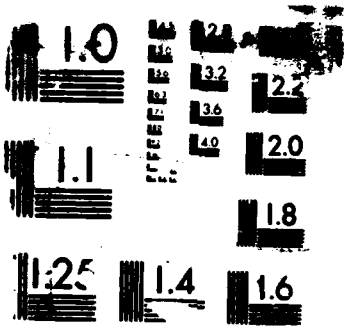

Disease and Injury in U.S. Navy Engineering Occupations

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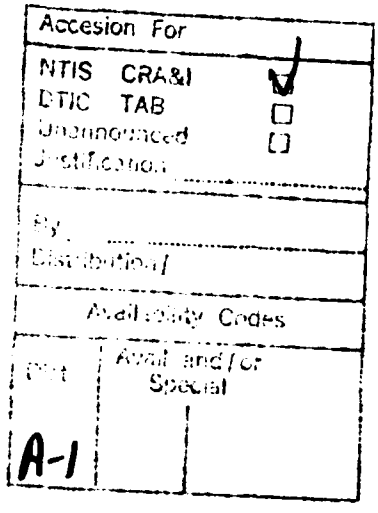

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SUMMARY

Problem

Previous Naval Health Research Center studies have identified several U.S. Navy engineering occupations at higher than average Navy risk for disease and injury. The Chief of Naval Operations requested a follow-up study addressing the health risks of assignment to Navy engineering occupations. In response, this prospective study of disease and injury in Navy engineering personnel was done.

Objective

This study assessed the risk of occurrence of disease and injury in active-duty enlisted Navy engineering personnel compared to the total Navy during two time periods, 1974-79 and 1980-83.

Approach

All white male active-duty enlisted personnel in 10 Navy engineering occupations were identified from the NHRC Career History File. Person-years at risk for engineering occupations and the total Navy were determined for the two time periods.

Hospitalizations were identified from the NHRC Medical History File. This file was searched for all primary discharge diagnoses of disease and injury occurring in Navy engineering personnel, and all other Navy personnel. Diagnoses were grouped into 15 disease and injury categories.

Hospitalization rates for these categories were determined and Standardized Morbidity Ratios (SMRs) were calculated as a summary measure of risk to minimize the effects of differing age-distributions in the occupations under study. Significance testing was performed using the Poisson distribution with a five percent significance level.

Results

All Navy engineering occupations combined had about 20% higher risks for nervous system disorders (principally hearing loss), musculoskeletal disorders, and accidents. This excess was statistically significant. A large proportion of this excess was contributed by one occupational group: Boiler Technicians.

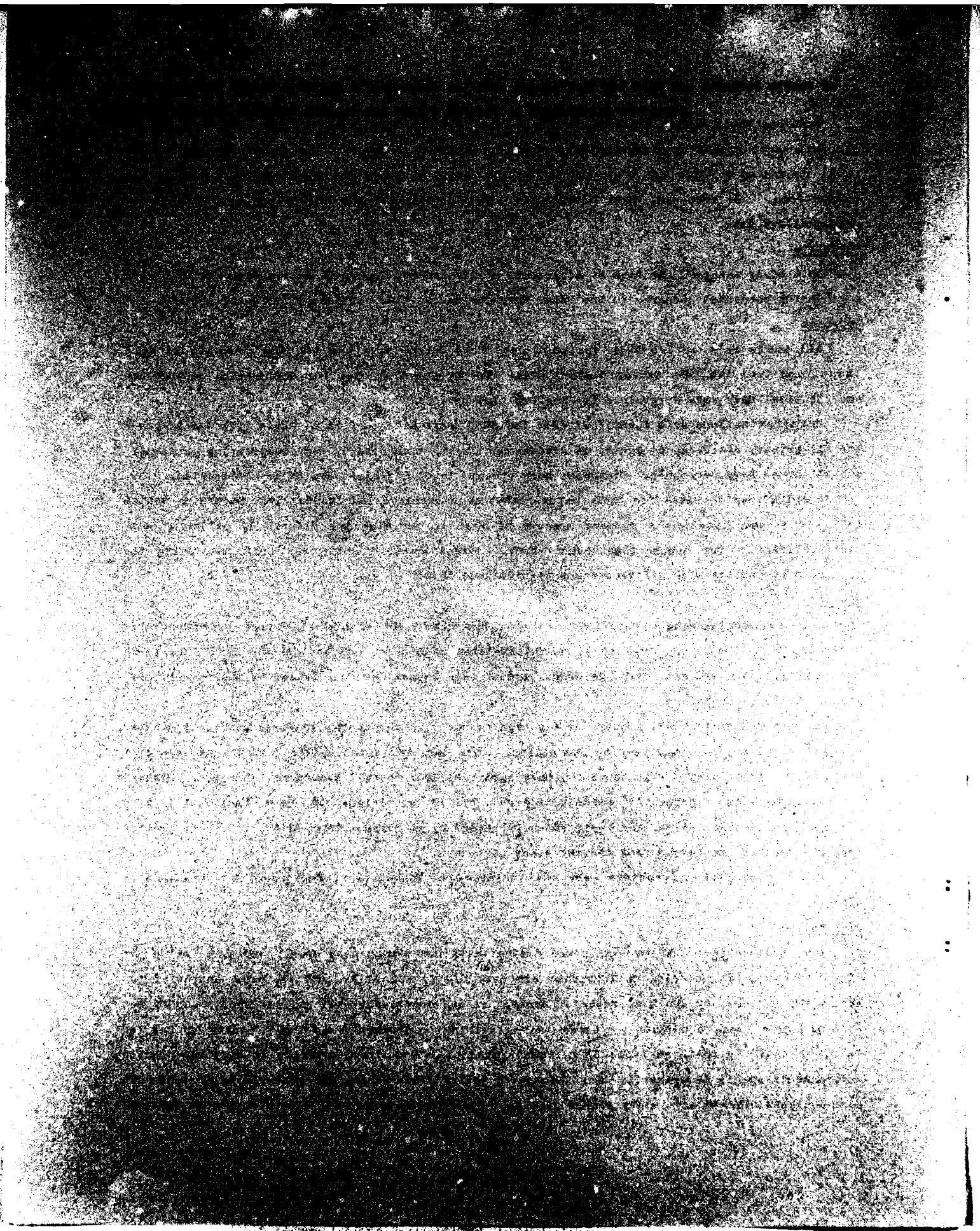
Boiler technicians had a consistently high excess risk across the greatest number of disease categories of any Navy engineering occupation. Disorders for which Boiler Technicians were statistically significantly well above the Navy norm included: mental disorders (35 percent higher) and nervous system disorders (45 percent higher). Boiler Technicians also have significantly high rates of accidental injury, and these rates increased by 10 percent from 40 to 50 percent greater than the rest of the Navy during the two study periods.

Other high risk occupations were Hull Maintenance Technicians, Enginemen, and Machinist's Mates.

Conclusions

Navy engineering work involves close contact with heavy machinery under conditions which are often adverse. Engineering environments are hot, dirty, and noisy, and the high potential for accidents is shown by the high rates of accidental and musculoskeletal injury experienced by men working under these conditions. Noise in engineering environments also contributes to hearing loss, as shown by the high rates of nervous system disorders. Improvements in Navy engineering environments should be primarily directed toward Boiler Technicians, who were the major contributor to excess disease and injury observed in Navy engineering personnel. Improvements in the work

Tables (data).



Disease and Injury in U.S. Navy Engineering Occupations

Edward D. Gorham, Frank C. Garland, James C. Helmkamp, E. K. Eric Gunderson

Naval Health Research Center

Several studies conducted at the Naval Health Research Center (NHRC) suggested that U.S. Navy engineering personnel may be at increased risk of disease and injury (1-5). In September of 1985 the Chief of Naval Operations requested NHRC to conduct a more comprehensive analysis. In response, this study of Navy engineering personnel was done to assess their risk of disease and injury in comparison to the total Navy during two time periods, 1974-79 and 1980-83.

A study of total hospital admission rates by Gunderson and Colcord followed a cohort of men in 56 enlisted occupations from July 1965 through December 1976 and reported three engineering occupations in the highest quartile: Boiler Technicians, Hull Maintenance Technicians, and Enginemen (1). Persons in these occupations experienced total hospitalization rates above the Navy norm for all neoplasms, accidents, and nervous system disorders (principally hearing loss).

A survey of the habitability and health aboard 20 U.S. Navy Pacific and Atlantic Fleet combat ships found that engineering division personnel worked under conditions which were self-perceived as unsafe in environments considered hot, dirty, and noisy. Boiler and machinery personnel had relatively high injury rates determined through sick call reports (2). This finding was supported by a study by Ferguson et al. which found that on-duty Boiler Technicians and Hull Maintenance Technicians had almost double the accident rates of other Navy occupations (3).

Two studies of malignant neoplasms, Hodgkin's disease and testicular cancer in Navy personnel suggested that certain engineering groups are at increased risk for these disorders (4, 5). Machinist's Mates had approximately twice the expected incidence of Hodgkin's disease compared to total Navy incidence (standardized incidence ratio [SIR] = 2.3, $p \leq 0.05$). Two other engineering groups, Enginemen and Interior Communications Electricians, had increased risk of Hodgkin's disease (SIR = 1.7, and 2.4, respectively), but this increase was not statistically significant (4). Enginemen did have about three times the likelihood of developing testicular cancer (SIR = 2.9) compared to the total Navy, a statistically significant excess risk (5).

In addition to excess morbidity, unauthorized absence, desertion, and premature attrition rates for personnel in engineering occupations (particularly Boiler Technicians) have been reported to be higher than those for other Navy occupations (6), suggesting that severe work environments take a toll on performance and retention as well as health.

Methods

The Naval Health Research Center has developed computerized medical and personnel data files which contain all hospitalization and career event records for active-duty enlisted naval personnel for the period 1965-83. Incident cases in this study were ascertained from these files and defined as all primary hospital discharge diagnoses occurring in white male active-duty enlisted personnel during any hospitalization from 1974-79 or 1980-83. The time period of the study was divided in order to assess any recent changes in morbidity in this population in contrast to the earlier time period. Ten engineering occupations were selected as the study population (Table 1).

Age-, race-, and sex-specific incidence rates were calculated for 15 broad categories of illness and injury (Table 2) based on the International Classification of Diseases, Eighth and

Ninth Revisions [ICDA-8, ICD-9] (7, 8). Certain common but less serious disorders were deleted from their categories. Dental disorders were deleted from digestive diseases, and the diagnosis of hemorrhoids was deleted from circulatory disorders.

The population denominators used in the calculation of incidence rates in this study were person-years at risk for white male enlisted personnel for the two study periods. To increase comparability of total Navy population rates with specialized and highly trained engineering personnel two entry-level groups were not included in the total Navy rates; these were Seaman and Airman (approximately 15 percent of total Navy person-years). Fireman, an entry-level engineering designation, was maintained in the analysis because of interest in the health status of engineering occupations throughout their careers.

Age-adjustment was performed using the indirect method due to the small number of cases in some age and occupation categories (9). Standardized morbidity ratios (SMRs) for each engineering occupation were calculated using expected values based on total Navy age-specific incidence rates (excluding Seaman and Airman) (9). The Poisson distribution was used to calculate all 95 percent confidence intervals and to assess the statistical significance of all reported differences in risk by occupation (9).

Results

Person-years by age for each engineering occupation and the total Navy (excluding Seaman and Airman) for the two study periods are shown in Tables 3 and 4. All engineering occupations comprised 23 percent of the total Navy over these two periods.

Overall, morbidity in engineering personnel was above the Navy norm in the following four categories (Table 5):

Mental disorders. Mental disorders were statistically significant more frequently in all engineering personnel during the first study period (SMR = 1.2), but this excess disappeared during the second (SMR = 1.0). Boiler Technicians contributed to the excess during both periods (SMR = 1.4 and 1.3, respectively). Fireman had the highest excess for mental disorders of any single engineering group (SMR = 1.7) during the first study period, but this large difference did not persist into the second period (SMR = 1.1).

Nervous system. Disorders of the nervous system and sense organs (particularly hearing loss) were consistently 20 percent higher among all engineering personnel compared to the total Navy, and this difference was statistically significant during both study periods (SMR = 1.2, 1.2). A 30 percent increased risk was present for Enginemen during both study periods, and this excess was statistically significant during the first period. Boiler Technicians had significantly increased risk during both periods (SMR = 1.6, 1.3). Firemen had significantly increased risk during the first period only (SMR = 1.4, 0.8).

Musculoskeletal disorders. Musculoskeletal disorders were 20 percent higher in engineering personnel during the first study period and 10 percent higher during the second. Highest risk groups included Boiler Technicians, Hull Maintenance Technicians, Machinery Repairmen, Enginemen and Machinists Mates. Boiler Technicians were the highest risk group with a significant 40 percent increased risk for both periods (SMR = 1.4, and 1.4). Hull Maintenance Technicians also had a significant excess during both periods and showed a slight increase (SMR = 1.3, and 1.4).

Accidents. Accidental injuries were 20 percent higher than the rest of the Navy during the first period of the study for all engineering rates combined (SMR = 1.2). This excess was reduced during the second period of the study to only 10 percent above the Navy norm (SMR = 1.1), and this difference was not statistically significant. The decreasing trend in accidents did not occur for Boiler Technicians whose risk increased by 10 percent during the study, rising from an SMR of 1.4, during the first phase, to a statistically sigrificant excess of 1.5 during the final study period.

Four engineering groups are the primary contributors to these high categories of morbidity:

Boiler Technicians. Boiler Technicians were an average of 35 percent above the Navy norm for mental disorders during 1974-79 and 1980-83. Boiler Technicians had a 45 percent excess for nervous system disorders and a 40 percent excess for musculoskeletal disorders. Accidents, which decreased by 10 percent in the total Navy during the two study periods, increased in Boiler Technicians by 10 percent from an SMR of 1.4 to 1.5.

Boiler Technicians also had significantly high risk of circulatory system disorders compared to the rest of the Navy with a 30 percent increase over the two study periods from an SMR of 1.3 to 1.6.

Hull Maintenance Technicians. Hull Maintenance Technicians had approximately 40 percent greater hospitalization rates for musculoskeletal disorders (SMR = 1.3, 1.4) and accidents (SMR = 1.4, 1.4) than the rest of the Navy. This excess risk was statistically significant and was present during both study periods.

Enginemen. Enginemen had 30 percent greater hospitalization rates for nervous system disorders than the rest of the Navy during both study periods and 20 percent higher risk for accidents.

Machinist's Mates. Machinist's Mates were the only engineering group with a significant excess of malignant neoplasms (SMR = 1.4), but this occurred only during the first phase of the study and dropped to the Navy norm during 1980-83 (SMR = 1.0). This finding of an excess risk is consistent with an earlier study which found Machinist's Mates at excess risk for Hodgkin's disease (SIR = 2.3, $p < 0.05$) (4).

Age-specific hospitalization rates for each of the 15 disease categories are listed in the Appendix Tables A1-A15 for 1974-79 and Tables B1-B15 for 1980-83).

Discussion

This study defined the general pattern of morbidity in Navy engineering occupations, and a strong pattern emerges. Boiler Technicians have the highest and most consistent excess risk across the greatest number of disease categories of any Navy engineering occupation. Disorders for which Boiler Technicians are statistically well above the Navy norm include: mental disorders (35 percent higher), nervous system disorders (45 percent higher), circulatory system disorders (45 percent higher), and musculoskeletal system disorders (45 percent higher). Boiler Technicians also have significantly high rates of accidental injury which have increased by 10 percent from 40 to 50 percent greater than the rest of the Navy over the 10-year study period. Efforts to improve Navy engineering environments should be directed primarily toward Boiler Technicians, since this group is the major contributor to the overall excess risk seen in engineering occupations.

Engineering personnel overall showed an excess of morbidity compared to other Naval occupational groups. All engineering personnel combined had a 20 percent higher risk of nervous system hospitalizations, for example, and this difference persisted and remained significant throughout the study period.

There was a 10 percent decline from the significantly elevated risks observed in all engineering personnel over the study period for accidents and musculoskeketal injuries (SMR = 1.2), but a slight excess (SMR = 1.1) is still present.

Hull Maintenance Technicians consistently showed a high risk of accidental injury (SMR = 1.4, 1.4) and musculoskeletal disorders (SMR = 1.3, 1.4) compared to the total Navy.

Navy Engineering work involves close contact with heavy machinery under conditions which are often adverse. Engineering environments are hot, dirty, and noisy, and the high potential for accidents is shown by the high rates of accidental and musculoskeletal injury experienced by men working under these conditions. Noise in engineering environments also contributes to hearing loss as shown by the high pattern of risk for nervous system disorders which include hearing loss.

Increased risk for cancer might also be expected due to exposure to volatile solvents and the products of combustion. Only Machinist's Mates seemed to have a significantly increased risk for malignant neoplasms (SIR = 1.4), but this occurred during the first phase of the study and dropped to the Navy norm during 1980-83. This finding is consistent with the excess risk of Hodgkin's disease which has been observed for this group (4).

This study was restricted to active-duty personnel, and, therefore, cancer occurring after separation from active-duty was not ascertained. In future studies, longer follow-up, particularly for cancer, which may take many years after exposure to occur, will be needed in order to detect an increased cancer risk if one is present.

The use of broadly defined disease and occupational categories in this study has the potential to obscure specific relationships which might exist between a particular occupational exposure and disease outcome. The discovery of the specific nature and severity of health risks in Naval occupations requires a more precise definition of health outcomes than was possible in this approach.

To better address the health risks of working in the Navy engineering environment future analysis of morbidity among Navy engineering personnel should be extended to include study of morbidity by occupational sub-specialties, duty stations such as ship type, and specific disease outcomes.

Future analyses should include other types of health outcomes such as Medical Board actions, Physical Evaluation Board recommendations and death records. Longer medical follow-up periods for Navy personnel could be instituted with the co-operation of other agencies, such as the Veterans Administration and the Medical Follow-up Agency of the National Research Council.

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Table 1. Navy Engineering Occupations, Naval Health Research Center, 1986

Engineering occupation	Alphabetic code	Numeric code
Machinist's Mate	MM	3700
Engineman	EN	3800
Machinery Repairman	MR	3900
Boiler Technician	BT	4000
Electrician's Mate	ET	4100
Interior Communications Electrician	IC	4200
Hull Maintenance Technician	HT	4300
Gas Turbine Specialist	GS	4400
Patternmaker/Molder	PM/ML	4600/4700
Fireman	FR,FA,FN	5000

Table 2. Diagnostic Categories and International Classification of Disease Codes Included in Engineering Morbidity Study, Naval Health Research Center, 1986

Diagnostic category	International Classification of Diseases	
	Eighth revision code	Ninth revision code
1. Infectious and parasitic diseases	000 - 136	000 - 136
2. Malignant neoplasms	140 - 209	140 - 209
3. Benign neoplasms	210 - 239	210 - 239
4. Endocrine, nutritional and metabolic diseases	240 - 279	240 - 279
5. Diseases of the blood	280 - 289	280 - 289
6. Mental disorders	290 - 315	290 - 315
7. Nervous system and sense organ disorders	320 - 389	320 - 389
8. Circulatory diseases (hemorrhoids deleted)	390 - 458 (455 deleted)	390 - 459 (455 deleted)
9. Diseases of the respiratory system	460 - 519	460 - 519
10. Diseases of the digestive system (dental disorders deleted)	520 - 577 (520 - 525.9 deleted)	520 - 579 (520 - 525.9 deleted)
11. Diseases of the genitourinary system	580 - 629	580 - 629
12. Diseases of the skin	680 - 709	680 - 709
13. Diseases of the musculoskeletal system and connective tissue	710 - 738	710 - 738
14. Symptoms and ill-defined conditions	780 - 796	780 - 799
15. Accidents, poisonings, and violence	800 - 999	800 - 999

Table 3. Naval Engineering Occupational Groups and Populations by Age, Active-duty Enlisted Personnel, White Males, 1974-79

Occupational group			Population in person-years of enlisted personnel by age-group								
Title	Alpha Abbrev.	Numerical Code	17-19	20-21	22-24	25-29	30-34	35-39	40-44	45+	All ages
1. Machinist's Mate	MM	3700	17,767	31,938	35,744	23,506	12,247	9,624	1,658	495	132,979
2. Engineman	EN	3800	6,527	11,112	8,243	6,831	6,216	4,797	1,080	493	45,299
3. Machinery Repairman	MR	3900	1,476	3,278	2,849	2,074	1,636	1,406	369	123	13,211
4. Boiler Technician	BT	4000	11,717	16,266	11,875	7,223	5,978	5,260	990	275	59,584
5. Electrician's Mate	EM	4100	6,517	15,196	16,289	10,463	5,760	5,604	1,219	324	61,372
6. Interior Comm. Elec.	IC	4200	2,778	7,511	8,048	5,784	3,327	2,616	406	62	30,532
7. Hull Technician	HT	4300	8,962	16,072	12,656	9,657	6,836	4,870	1,342	530	60,925
8. Gas Turbine Spec.	GS	4400	40	153	164	150	128	88	9	2	734
9. Patternmaker/Molder	PM/ML	4600,4700	278	604	481	318	219	223	104	31	2,258
10. Fireman	FR/FA/FN	5000	53,974	32,272	11,208	2,783	451	55	6	2	100,751
All engineering occupations			110,036	134,402	107,557	68,789	42,798	34,543	7,183	2,337	507,645
Total Navy*			185,093	374,000	392,797	337,290	239,421	192,309	46,814	18,196	1,785,920

*Seaman and Airmen excluded

Table 4. Naval Engineering Occupational Groups and Populations by Age, Active-duty Enlisted Personnel, White Males, 1980-83

Occupational group			Population in person-years of enlisted personnel by age-group								
Title	Alpha Abbrev.	Numerical Code	17-19	20-21	22-24	25-29	30-34	35-39	40-44	45+	All ages
1. Machinist's Mate	MM	3700	10,421	22,953	27,593	19,204	7,583	5,627	1,503	318	95,202
2. Engineman	EN	3800	3,261	7,510	6,221	4,162	2,908	2,758	718	266	27,804
3. Machinery Repairman	MR	3900	695	1,999	1,774	1,132	917	734	277	79	7,607
4. Boiler Technician	BT	4000	4,015	10,297	10,763	7,732	3,325	2,689	720	183	39,724
5. Electrician's Mate	EM	4100	3,717	10,071	11,443	7,424	3,101	2,484	852	247	39,339
6. Interior Comm. Elec.	IC	4200	1,008	4,189	5,367	4,069	2,079	1,374	404	45	18,535
7. Hull Technician	HT	4300	3,744	10,307	9,856	7,040	4,608	3,247	822	298	39,922
8. Gas Turbine Spec.	GS	4400	547	1,374	1,663	1,386	922	543	106	11	6,552
9. Patternmaker/Molder	PM/ML	4600,4700	73	235	246	194	124	106	55	13	1,046
10. Fireman	FR/FA/FN	5000	30,228	23,460	10,854	2,935	514	73	10	1	68,075
All engineering occupations			57,709	92,395	85,780	55,278	26,081	19,635	5,467	1,461	343,806
Total Navy*			89,999	229,718	274,807	233,071	152,269	116,995	36,903	11,469	1,145,231

*Seaman and Airman excluded.

Table 5. Standard Morbidity Ratios (SMR) for Selected Diagnostic Categories, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males 1974-79 and 1980-83

	Diagnostic Categories																	
	Infectious		Mental		Nervous		Circulatory		Digestive		Musculoskeletal		Accidents		Malig. Neop		Benign Neop	
	SMR		SMR		SMR		SMR		SMR		SMR		SMR		SMR		SMR	
	74-79	80-83	74-79	80-83	74-79	80-83	74-79	80-83	74-79	80-83	74-79	80-83	74-79	80-83	74-79	80-83	74-79	80-83
MM	0.7*	0.7*	1.0	0.9	1.1	1.1	1.1	0.9	1.0	1.0	1.2**	1.1	1.0	1.0	1.4**	1.0	1.1	0.9
EN	1.0	0.7*	1.1	1.1	1.3**	1.3	0.8	0.7*	1.0	1.0	1.1	1.2**	1.2**	1.2**	1.1	0.5	1.4**	1.0
MR	0.7*	0.8	1.0	0.8	1.0	0.4*	0.8	0.8	1.1	1.0	1.4**	0.9	1.1	1.1	0.5	0.8	1.7**	0.9
ET	1.0	1.0	1.4**	1.3**	1.6**	1.3**	1.3**	1.6**	1.1	1.1	1.4**	1.4**	1.4	1.5**	0.9	0.8	1.1	1.1
EM	0.7*	0.7*	0.9	0.9	1.1	0.9	1.0	0.8	1.0	0.8*	1.0	1.0	1.0	0.9	1.0	1.0	1.1	0.7
IC	0.8	0.8	0.9	0.8	1.1	0.9	1.0	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	1.1	0.9
HT	0.9	0.9	1.2	1.0	1.2	1.2	1.2	0.9	1.2**	1.0	1.3**	1.4**	1.4**	1.4**	0.8	0.9	1.4	1.0
GS	0.6	0.8	1.0	0.8	1.7	1.4	0	0.4*	0.4	0.9	0.9	0.7*	1.4	1.1	0	0.3	2.8	0.7
FM	1.6	1.0	1.2	0.9	1.8	0.7	1.3	0.7	1.0	1.1	1.4	0.8	1.2	1.3	0	0	0.5	2.2
FN	1.3**	0.8*	1.7**	1.1	1.4**	0.8	1.1	0.7	1.2**	0.8*	1.2**	0.9	1.4**	0.9	0.7	0.6	1.2	0.6*
All Eng. rates	0.9	0.8*	1.2**	1.0	1.2**	1.2**	1.2	0.9	1.1	1.0	1.2**	1.1	1.2**	1.1	1.0	0.8	1.2	0.9
Total U.S. Navy***	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

*Significantly lower than total Navy.

**Significantly higher than total Navy.

***Seaman and Airman excluded.

Table A1. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Infectious and Parasitic Diseases per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	100	56.3	132	41.3	123	34.4	57	24.2	28	22.9	20	20.8	7	42.2	1	20.2	468	0.7	0.6, 0.8
EN	37	56.7	65	58.5	34	41.2	30	43.9	16	25.7	21	43.8	8	74.1	1	20.3	212	1.0	0.9, 1.1
MR	6	40.7	10	30.5	12	42.1	7	33.8	3	18.3	3	21.3	1	27.1	0	0.0	42	0.7	0.5, 0.9
BT	78	66.6	96	59.0	72	60.0	30	41.5	18	30.1	19	36.1	4	40.4	0	0.0	317	1.0	0.9, 1.1
EM	34	52.2	71	46.7	54	33.2	35	33.5	13	22.6	7	12.5	0	0.0	1	30.9	215	0.7	0.6, 0.8
IC	20	72.0	37	49.3	38	47.2	14	24.2	7	21.0	5	19.1	0	0.0	0	0.0	121	0.8	0.7, 1.0
HT	51	56.9	98	61.0	63	49.8	40	41.4	16	23.4	12	24.6	4	29.8	1	18.9	285	0.9	0.8, 1.1
GS	0	0.0	0	0.0	1	61.0	1	66.7	0	0.0	0	0.0	0	0.0	0	0.0	2	0.6	0.1, 2.3
PM	4	143.9	5	82.8	5	104.0	2	62.9	0	0.0	1	44.8	0	0.0	0	0.0	17	1.4	0.9, 2.5
FN	532	98.6	255	79.0	93	83.0	22	79.1	1	22.2	0	0.0	0	0.0	0	0.0	903	1.3	1.2, 1.4
All Engineering Occupations Combined	862	78.3	769	57.2	495	46.0	238	34.6	102	23.8	88	25.5	24	33.4	4	17.1	2,582	0.9	0.9, 1.0
All US Navy Occupations Combined*	1,456	78.7	2,297	61.4	2,055	52.3	1,263	37.5	573	23.9	385	20.0	112	23.9	41	22.5	8,182	1.0	

*Seaman and Airman excluded.

Table A2. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Malignant Neoplasms per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	2	1.1	18	5.6	25	7.0	15	6.4	7	5.7	18	18.7	6	36.2	3	60.6	94	1.4	1.1, 1.7
EN	2	3.1	2	1.8	7	8.5	1	1.5	8	12.9	6	12.5	2	18.5	1	20.3	29	1.1	0.7, 1.6
MR	0	0.0	2	6.1	0	0.0	0	0.0	0	0.0	2	14.2	0	0.0	0	0.0	4	0.5	0.1, 1.3
BT	2	1.7	8	4.9	4	3.4	5	6.9	1	1.7	6	11.4	0	0.0	0	0.0	26	0.9	0.6, 1.3
EM	0	0.0	2	1.3	4	2.5	7	6.7	7	12.2	9	16.1	2	16.4	1	30.9	32	1.0	0.7, 1.3
IC	0	0.0	4	5.3	5	6.2	1	1.7	2	6.0	2	7.6	0	0.0	0	0.0	14	0.9	0.5, 1.5
HT	1	1.1	1	0.6	3	2.4	3	3.1	5	7.3	9	18.5	2	14.9	4	75.5	28	0.8	0.6, 1.2
GS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	--	--, --
PM	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	--	--, --
FM	6	1.1	11	3.4	1	0.9	2	7.2	0	0.0	0	0.0	0	0.0	0	0.0	20	0.7	0.4, 1.1
All Engineering Occupations Combined	13	1.2	48	3.6	49	4.6	34	4.9	30	7.0	52	15.1	12	16.7	9	38.5	247	1.0	0.9, 1.1
All US Navy Occupations Combined*	40	2.2	124	3.3	169	4.3	185	5.5	172	7.2	206	10.7	104	22.2	74	40.7	1,174	1.0	

*Seamen and Airman excluded.

Table A3. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Benign Neoplasms per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	13	7.3	29	9.1	36	10.1	24	10.2	15	12.2	16	16.6	4	24.1	0	0.0	137	1.1	0.9, 1.3
EN	6	9.2	12	10.8	10	12.1	7	10.2	5	8.0	16	33.4	2	18.5	4	81.1	62	1.4	1.1, 1.8
MR	1	6.8	3	9.2	3	10.5	2	9.6	6	36.7	7	49.8	0	0.0	0	0.0	22	1.7	1.1, 2.6
BT	16	13.7	8	4.9	13	10.9	14	19.4	6	10.0	5	9.5	1	10.1	0	0.0	63	1.1	0.9, 1.5
EM	2	3.1	13	8.6	20	12.3	6	5.7	7	12.2	11	19.6	3	24.6	0	0.0	62	1.1	0.8, 1.3
IC	2	7.2	4	5.3	11	13.7	2	3.5	4	12.0	9	34.4	0	0.0	0	0.0	32	1.1	0.8, 1.5
HT	9	10.0	21	13.1	10	7.9	16	16.6	14	20.5	5	10.3	4	29.8	1	18.9	80	1.4	1.1, 1.7
GS	0	0.0	0	0.0	1	61.0	0	0.0	1	78.1	0	0.0	0	0.0	0	0.0	2	2.8	0.3,10.0
FM	1	36.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.5	0.0, 2.5
FN	40	7.4	31	9.6	14	12.5	6	21.6	0	0.0	0	0.0	0	0.0	0	0.0	91	1.2	0.9, 1.4
All Engineering Occupations Combined	90	8.2	121	9.0	118	11.0	77	11.2	58	13.6	69	20.0	14	19.5	5	21.4	552	1.2	1.1, 1.3
All US Navy Occupations Combined*	137	7.4	299	8.0	364	9.3	333	9.9	237	9.9	266	13.8	70	14.9	51	28.0	1,757	1.0	

*Seaman and Airman excluded.

Table A4. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Endocrine Nutritional, and Metabolic Diseases per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	6	3.4	9	2.8	7	2.0	18	7.7	10	8.2	19	19.7	4	24.1	2	40.4	15	1.0	0.8, 1.3
EN	1	1.5	6	5.4	3	3.6	3	4.4	4	6.4	10	20.8	1	9.3	3	60.9	31	1.1	0.8, 1.6
MR	0	0.0	1	3.1	1	3.5	2	9.6	4	24.4	0	0.0	2	54.2	1	81.3	11	1.3	0.7, 2.4
BT	1	0.9	5	3.1	3	2.5	5	6.9	2	3.3	3	5.7	2	20.2	5	181.8	26	0.8	0.5, 1.2
EM	0	0.0	2	1.3	6	3.7	4	3.8	1	1.7	8	14.3	5	41.0	0	0.0	26	0.7	0.5, 1.1
IC	0	0.0	1	1.3	3	3.7	2	3.5	2	6.0	3	11.5	0	0.0	0	0.0	11	0.6	0.3, 1.2
HT	2	2.2	3	1.9	5	4.0	4	4.1	7	10.2	6	12.3	1	7.5	3	56.6	31	0.9	0.6, 1.2
GS	0	0.0	0	0.0	1	61.0	0	0.0	1	78.1	0	0.0	0	0.0	0	0.0	2	4.4	0.5, 15.9
PM	0	0.0	0	0.0	1	20.8	0	0.0	0	0.0	1	44.8	1	96.2	0	0.0	3	2.1	0.4, 6.1
FN	14	2.6	13	4.0	3	2.7	3	10.8	0	0.0	0	0.0	0	0.0	0	0.0	33	1.1	0.7, 1.5
All Engineering Occupations Combined	24	2.2	40	3.0	33	3.1	41	6.0	31	7.2	50	14.5	16	22.3	14	59.9	249	1.0	0.9, 1.0
All US Navy Occupations Combined**	45	2.4	123	3.3	180	4.6	198	5.9	169	7.1	255	13.3	90	19.2	64	35.2	1,124	1.0	

**Seaman and Airman excluded.

Table A5. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Blood per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	5	2.8	4	1.3	5	1.4	1	0.4	1	0.8	1	1.0	0	0.0	0	0.0	17	0.6	0.3, 0.9
EN	2	3.1	2	1.8	2	2.4	0	0.0	0	0.0	3	6.3	0	0.0	0	0.0	9	0.9	0.4, 1.7
MR	4	27.1	0	0.0	2	7.0	1	4.8	0	0.0	0	0.0	0	0.0	0	0.0	7	2.5	1.0 5.1
BT	2	1.7	6	3.7	6	5.1	1	1.4	0	0.0	1	1.9	0	0.0	0	0.0	16	1.2	0.7, 2.0
EM	1	1.5	2	1.3	1	0.6	1	1.0	0	0.0	0	0.0	0	0.0	1	30.9	6	0.4	0.2, 1.0
IC	2	7.2	3	4.0	0	0.0	1	1.7	0	0.0	0	0.0	1	24.6	0	0.0	7	1.1	0.4, 2.2
HT	3	3.3	3	1.9	4	3.2	0	0.0	0	0.0	1	2.1	0	0.0	1	18.9	12	0.9	0.5, 1.6
GS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	--	--, --
PM	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	--	--, --
FN	10	1.9	12	3.7	3	2.7	3	10.8	0	0.0	0	0.0	0	0.0	0	0.0	28	1.1	0.8, 1.7
All Engineering Occupations Combined	29	2.6	32	2.4	23	2.1	8	1.2	1	0.2	6	1.7	1	1.4	2	8.6	102	0.9	0.8, 1.1
All US Navy Occupations Combined*	48	2.6	84	2.2	89	2.3	66	2.0	39	1.6	33	1.7	11	2.3	10	5.5	380	1.0	

*Seaman and Airman excluded.

Table A6. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Mental Disorders per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs No. of cases	Rate	20-21 yrs No. of cases	Rate	22-24 yrs No. of cases	Rate	25-29 yrs No. of cases	Rate	30-34 yrs No. of cases	Rate	35-39 yrs No. of cases	Rate	40-44 yrs No. of cases	Rate	45+ yrs No. of cases	Rate	All Ages No. of cases	SMR	95% C.I.
MM	163	91.7	252	78.9	272	76.1	188	80.0	136	111.0	141	146.5	10	60.3	6	121.2	1,168	1.0	0.9, 1.0
EN	37	56.7	93	83.7	72	87.3	80	117.1	95	152.8	71	148.0	11	101.9	1	20.3	460	1.1	1.0, 1.2
MR	10	67.8	21	64.1	26	91.3	29	139.8	21	128.4	10	71.1	1	27.1	0	0.0	118	1.0	0.8, 1.2
BT	126	107.5	171	105.1	129	108.6	113	156.4	104	174.0	82	155.9	16	161.6	10	363.6	751	1.4	1.3, 1.5
EM	32	49.1	105	69.1	116	71.2	93	88.9	61	105.9	81	144.5	12	98.4	7	216.0	507	0.9	0.8, 1.0
IC	22	79.2	47	62.6	51	63.4	54	93.4	35	105.2	33	126.1	0	0.0	1	161.3	342	0.9	0.8, 1.0
HT	64	71.4	154	95.8	111	87.7	128	132.5	99	144.8	55	112.9	27	201.2	6	113.2	644	1.2	1.1, 1.2
GS	0	0.0	1	65.4	0	0.0	2	133.3	1	78.1	3	340.9	0	0.0	0	0.0	7	1.0	0.4, 2.1
FH	2	71.9	5	82.8	5	104.0	2	62.9	7	319.6	4	179.4	0	0.0	0	0.0	25	1.2	0.8, 1.8
FN	658	121.9	481	149.0	205	182.9	107	384.5	14	310.4	4	727.3	2	3,333.3	0	0.0	1,471	1.7	1.6, 1.8
All Engineering Occupations Combined	1,114	101.2	1,330	99.0	987	91.8	796	115.7	573	133.9	484	140.1	79	110.0	31	132.6	5,394	1.2	1.1, 1.3
All US Navy Occupations Combined*	1,700	91.9	3,095	82.8	3,189	81.2	3,019	89.5	2,600	108.6	2,219	115.4	505	107.9	200	109.9	16,527	1.0	

*Seaman and Airman excluded.

Table A7. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Nervous System and Sense Organ Disorders per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs No. of cases	Rate	20-21 yrs No. of cases	Rate	22-24 yrs No. of cases	Rate	25-29 yrs No. of cases	Rate	30-34 yrs No. of cases	Rate	35-39 yrs No. of cases	Rate	40-44 yrs No. of cases	Rate	45+ yrs No. of cases	Rate	All Ages No. of cases	SMR	95% C.I.
MM	27	15.2	61	19.1	90	25.2	57	24.2	46	37.6	50	52.0	11	66.3	3	60.6	345	1.1	1.0, 1.3
EN	12	18.4	27	24.3	25	30.3	26	38.1	25	40.2	18	37.5	4	37.0	3	60.9	140	1.3	1.1, 1.5
MR	1	6.8	5	15.3	3	10.5	5	24.1	4	24.4	10	71.1	3	81.3	2	162.6	33	1.0	0.7, 1.4
BT	35	29.9	33	20.3	46	38.7	35	48.5	36	60.2	31	58.9	7	70.7	1	36.4	2..	1.6	1.4, 1.9
EM	5	7.7	37	24.3	43	26.4	26	24.8	13	22.6	23	41.0	11	90.2	6	185.2	164	1.1	1.0, 1.3
IC	1	3.6	20	26.6	22	27.3	14	24.2	16	48.1	3	11.5	1	24.6	0	0.0	77	1.1	0.9, 1.3
HT	13	14.5	29	18.0	37	29.2	27	28.0	31	45.3	23	47.2	10	74.5	3	56.6	173	1.2	1.0, 1.4
GS	0	0.0	0	0.0	0	0.0	2	133.3	0	0.0	1	113.6	0	0.0	0	0.0	3	1.7	0.3, 4.8
PM	1	36.0	1	16.6	2	41.6	1	31.4	3	137.0	0	0.0	2	192.3	0	0.0	10	1.9	0.9, 3.3
FN	110	20.4	67	20.8	50	44.6	15	53.9	6	133.0	0	0.0	0	0.0	0	0.0	248	1.4	1.2, 1.5
All Engineering Occupations Combined	205	18.6	280	20.8	318	29.6	208	30.2	180	42.1	159	46.0	49	68.2	18	77.0	1,417	1.2	1.2, 1.3
All US Navy Occupations Combined*	296	16.0	735	19.7	876	22.3	750	22.2	675	28.1	709	36.9	250	53.4	121	66.5	4,412	1.0	

*Seaman and Airman excluded.

Table A8. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Circulatory Diseases per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79.

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	20	11.3	39	12.2	82	22.9	43	18.3	44	35.9	83	86.2	24	144.8	13	262.6	348	1.1	1.0, 1.2
EN	2	3.1	16	14.4	12	14.6	13	19.0	19	30.6	32	66.7	10	92.6	5	101.4	109	0.8	0.7, 1.0
MR	3	20.3	3	9.2	3	10.5	1	4.8	6	36.7	9	64.0	3	81.3	3	243.9	31	0.8	0.6, 1.1
BT	9	7.7	22	13.5	20	16.8	31	42.9	33	55.2	62	117.9	14	141.4	6	218.2	197	1.3	1.2, 1.5
EM	2	3.1	16	10.5	22	13.5	22	21.0	22	38.2	39	69.6	34	278.9	9	277.8	166	1.0	0.9, 1.2
IC	3	10.8	6	8.0	19	23.6	6	10.4	16	48.1	20	76.5	5	123.2	0	0.0	75	1.0	0.8, 1.2
HT	11	12.3	28	17.4	28	22.1	23	23.8	25	36.6	41	84.2	18	134.1	16	301.9	190	1.2	1.0, 1.3
GS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	—	—, —
PM	1	36.0	1	16.6	0	0.0	0	0.0	0	0.0	3	134.5	4	384.6	0	0.0	9	1.3	0.6, 2.5
FN	54	10.0	63	19.5	20	17.8	9	32.3	1	22.2	1	181.8	0	0	0	0.0	148	1.1	1.0, 1.3
All Engineering Occupations Combined	105	9.5	194	14.4	206	19.2	148	21.5	166	38.8	290	84.0	112	156.0	52	222.5	1,273	1.2	1.1, 1.3
All US Navy Occupations Combined*	204	11.0	493	13.1	684	17.4	688	20.4	838	35.0	1,438	74.7	579	123.7	381	209.4	5,305	1.0	

*Seaman and Airman excluded.

Table A9. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Respiratory System per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs No. of cases	Rate	20-21 yrs No. of cases	Rate	22-24 yrs No. of cases	Rate	25-29 yrs No. of cases	Rate	30-34 yrs No. of cases	Rate	35-39 yrs No. of cases	Rate	40-44 yrs No. of cases	Rate	45+ yrs No. of cases	Rate	All Ages No. of cases	SMR	95% C.I.
MM	75	42.2	179	56.0	189	52.9	104	44.2	59	48.2	51	53.0	10	60.3	4	80.8	671	0.9	0.8, 1.0
EN	32	49.0	72	64.8	45	54.6	35	51.2	25	40.2	16	33.4	7	64.8	1	20.3	233	0.9	0.8, 1.1
MR	8	54.2	19	58.0	12	42.1	14	67.5	6	36.7	12	85.3	0	0.0	0	0.0	71	1.0	0.8, 1.2
BT	81	69.1	126	77.5	74	62.3	47	65.1	32	53.5	36	68.4	4	40.4	6	218.2	406	1.2	1.1, 1.3
EM	35	53.7	85	55.9	95	58.3	49	46.8	26	45.1	21	37.5	6	49.2	3	92.6	3.0	0.9	0.8, 1.0
IC	6	21.6	54	71.9	48	59.6	25	43.2	30	90.2	15	57.3	5	123.2	0	0.0	183	1.1	0.9, 1.2
HT	55	61.4	127	79.0	91	71.9	72	74.6	31	45.3	23	47.2	11	82.0	4	75.5	414	1.2	1.1, 1.3
GS	1	250.0	2	130.7	1	61.0	0	0.0	0	0.0	1	113.6	0	0.0	0	0.0	5	1.3	0.4, 3.0
PM	5	179.9	5	82.8	6	124.7	1	31.4	2	91.3	0	0.0	0	0.0	0	0.0	19	1.5	0.9, 2.4
FN	437	81.0	291	90.2	89	79.4	22	79.1	4	88.7	0	0.0	0	0.0	0	0.0	843	1.1	1.2, 1.4
All Engineering Occupations Combined	735	66.8	960	71.4	650	60.4	369	53.6	215	50.2	175	50.7	43	59.9	18	77.0	3,165	1.1	1.0, 1.2
All US Navy Occupations Combined*	1,172	63.3	2,447	65.4	2,329	59.2	1,669	49.4	961	40.1	835	43.4	212	45.3	104	57.2	9,729	1.0	

*Seaman and Airman excluded.

Table A10. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Digestive System, per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	88	49.5	198	62.0	237	66.3	140	59.6	116	94.7	138	143.4	43	259.3	12	242.4	972	1.0	0.9, 1.1
EN	32	49.0	65	58.5	55	66.7	51	74.7	54	86.9	67	139.7	18	166.7	10	202.8	352	1.0	0.9, 1.1
MR	6	40.7	19	58.0	22	77.2	13	62.7	14	85.6	30	213.4	4	108.4	0	0.0	108	1.1	0.9, 1.3
BT	77	65.7	112	68.9	94	79.2	56	77.5	67	102.0	67	127.4	15	151.5	6	218.2	488	1.1	1.0, 1.2
EM	32	49.1	70	46.1	92	56.5	29	75.5	54	93.8	74	132.0	19	155.9	9	277.8	429	1.0	0.9, 1.0
IC	18	64.8	50	66.6	55	68.3	35	60.5	22	66.1	39	149.1	4	98.5	3	483.9	226	1.0	0.9, 1.2
HT	75	83.7	111	69.1	96	75.9	76	78.7	71	103.9	80	164.3	25	186.3	12	226.4	546	1.2	1.1, 1.3
GS	0	0.0	0	0.0	0	0.0	1	66.7	0	0.0	0	0.0	1	1,111.1	0	0.0	2	0.4	0.1, 1.3
PM	2	71.9	1	16.6	3	62.4	2	62.9	3	137.0	3	134.5	3	288.5	0	0.0	17	1.0	0.5, 1.6
FN	383	71.0	280	86.8	105	93.7	28	100.6	2	44.3	0	0.0	0	0.0	0	0.0	789	1.2	1.1, 1.3
All Engineering Occupations Combined	713	64.8	906	67.4	759	70.6	481	69.9	397	92.8	498	144.2	132	183.8	52	222.5	3938	1.1	1.0, 1.2
All US Navy Occupations Combined*	1,177	63.6	2,361	63.1	2,507	63.8	2,289	67.9	1,910	79.8	2,319	120.6	728	155.5	393	216.0	13,684	1.0	

*Seaman and Airman excluded.

Table A11. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Genitourinary System per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	44	24.8	63	19.7	84	23.5	62	26.4	37	30.2	27	28.1	7	42.2	2	40.4	326	0.8	0.7, 0.9
EN	10	15.3	30	27.0	22	26.7	31	45.4	20	32.2	20	41.7	7	64.8	2	40.6	142	1.0	0.9, 1.2
MR	2	13.6	5	15.3	12	42.1	6	28.9	7	42.8	4	28.4	1	27.1	0	0.0	37	0.9	0.6, 1.2
BT	18	15.4	48	29.5	34	28.6	28	38.8	10	16.7	13	24.7	2	20.2	0	0.0	153	0.9	0.7, 1.0
EM	12	18.4	37	24.3	32	19.6	36	34.4	25	43.4	28	50.0	10	82.0	2	61.7	182	1.0	0.8, 1.1
IC	7	25.2	16	21.3	19	23.6	20	34.6	15	45.1	7	26.8	1	24.6	1	161.3	86	0.9	0.7, 1.1
HT	16	17.9	39	24.3	42	33.2	33	34.2	32	46.8	22	45.2	7	52.2	3	56.6	194	1.0	0.9, 1.2
GS	0	0.0	0	0.0	1	61.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.4	0.0, 2.4
PM	1	36.0	3	49.7	0	0.0	0	0.0	1	45.7	3	134.5	1	96.2	0	0.0	9	1.3	0.6, 2.5
FN	119	22.0	107	33.2	29	25.9	18	64.7	2	44.3	0	0.0	0	0.0	0	0.0	275	1.1	1.0, 1.2
All Engineering Occupations Combined	229	20.8	348	25.9	275	25.6	234	34.0	149	34.8	124	35.9	36	50.1	10	42.8	1,396	0.9	0.9, 1.0
All US Navy Occupations Combined*	434	23.9	983	26.3	1,182	30.1	1,206	35.8	894	37.3	641	33.3	186	39.7	96	52.8	5,622	1.0	

*Seaman and Airman excluded.

Table A12. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Skin per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	84	47.3	135	42.3	130	36.4	68	28.9	43	35.1	32	33.3	3	18.1	1	20.2	496	1.0	0.9, 1.1
EN	24	36.8	53	47.7	51	61.9	22	32.2	16	25.7	10	20.8	3	27.8	1	20.3	180	1.1	0.9, 1.2
MR	4	27.1	14	42.7	13	45.6	5	24.1	8	48.9	7	49.8	4	108.4	0	0	55	1.1	0.9, 1.4
ET	75	64.0	99	60.9	75	63.2	42	58.1	21	35.1	18	34.2	3	30.3	2	72.7	335	1.4	1.3, 1.6
EM	22	33.8	50	32.9	72	44.2	38	36.3	28	48.6	16	28.6	2	16.4	1	30.9	229	1.0	0.9, 1.1
IC	9	32.4	30	39.9	34	42.2	21	36.3	9	27.1	16	61.2	0	0.0	0	0.0	119	1.0	0.9, 1.2
HT	40	44.6	84	52.3	64	50.6	41	42.5	26	38.0	16	32.9	3	22.4	0	0.0	274	1.2	1.0, 1.3
GS	0	0.0	1	65.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.4	0.0, 2.1
PM	2	71.9	2	33.1	2	41.6	0	0.0	0	0.0	1	44.8	0	0.0	0	0.0	7	0.8	0.3, 1.7
EN	265	49.1	185	57.3	74	66.0	17	61.1	2	44.3	2	363.6	0	0.0	0	0.0	545	1.2	1.1, 1.3
All Engineering Occupations Combined	525	47.7	653	48.6	515	47.9	254	36.9	153	35.7	118	34.2	18	25.1	5	21.4	2,234	1.1	1.0 1.2
All US Navy Occupations Combined*	835	45.1	1,694	45.3	1,637	41.7	1,055	31.3	662	27.6	497	25.8	111	23.7	39	21.4	6,530	1.0	

*Seaman and Airman excluded.

Table A13. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Musculoskeletal System and Connective Tissue per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	85	47.8	257	80.5	293	82.0	224	95.3	112	91.5	128	133.0	35	211.1	8	161.6	1142	1.2	1.1, 1.3
EN	26	39.8	82	73.8	81	98.3	46	67.3	49	78.8	64	133.4	13	120.4	5	101.4	366	1.1	1.0, 1.2
MR	5	33.9	23	70.2	34	119.3	23	110.9	15	91.7	31	220.5	4	108.4	2	162.6	137	1.4	1.2, 1.6
BT	93	79.4	138	84.8	139	117.1	81	112.1	60	100.4	82	155.9	18	181.8	5	181.8	616	1.4	1.3, 1.6
EM	23	35.3	122	80.3	118	72.4	92	87.9	40	79.9	54	96.4	8	65.6	5	154.3	468	1.0	0.9, 1.1
IC	17	61.2	56	74.6	50	62.1	50	86.4	26	78.1	26	99.4	2	49.3	1	161.3	228	1.0	0.9, 1.1
HT	54	60.3	134	83.4	131	103.5	101	104.6	77	112.6	60	123.2	17	126.7	6	113.2	580	1.3	1.2, 1.4
GS	0	0.0	1	65.4	3	182.9	1	66.7	0	0.0	0	0.0	0	0.0	0	0.0	5	0.9	0.3, 2.1
PM	2	71.9	5	82.8	6	124.7	2	62.9	4	182.6	5	224.2	0	0.0	0	0.0	24	1.4	0.9, 2.1
FN	265	49.1	288	89.2	121	108.0	43	154.5	7	155.2	2	363.6	0	0.0	0	0.0	726	1.[illegible]	1.1, 1.3
All Engineering Occupations Combined	570	51.8	1,106	82.3	976	90.7	663	96.4	396	92.5	452	130.9	97	135.0	32	136.9	4,268	1.2	1.1, 1.3
All US Navy Occupations Combined*	957	51.7	2,634	70.4	2,988	76.1	2,396	71.0	1,910	79.8	1,860	96.7	495	105.7	203	111.6	13,443	1.0	

*Seaman and Airman excluded.

Table A14. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Symptoms and Ill-defined Conditions per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	54	30.4	84	26.3	116	32.5	79	33.6	59	48.2	55	57.1	15	90.5	7	141.4	469	1.1	1.0, 1.2
EN	19	29.1	22	19.8	25	30.3	24	35.1	31	49.9	28	58.4	9	83.3	1	20.3	159	1.0	0.9, 1.2
MR	2	13.6	7	21.4	10	35.1	3	14.5	11	67.2	10	71.1	0	0.0	1	81.3	44	1.0	0.7, 1.3
BT	45	38.4	63	38.7	30	25.3	23	31.8	31	51.9	24	45.6	5	50.5	1	36.4	222	1.1	1.0, 1.2
EM	16	24.6	34	22.4	44	27.0	16	15.3	21	36.5	31	55.3	7	57.4	3	92.6	172	0.8	0.7, 1.0
IC	7	25.2	28	37.3	27	33.5	13	22.5	14	42.1	12	45.9	2	49.3	0	0.0	103	1.0	0.8, 1.2
HT	32	35.7	39	24.3	50	39.5	35	36.2	25	36.6	32	65.7	7	52.2	6	113.2	226	1.1	1.0, 1.2
GS	0	0.0	0	0.0	0	0.0	1	66.7	0	0.0	0	0.0	0	0.0	0	0.0	1	0.4	0.0, 2.2
PM	3	107.9	0	0.0	0	0.0	0	0.0	1	45.7	2	89.7	2	192.3	0	0.0	8	1.0	0.4, 2.0
FN	238	44.1	136	42.1	52	46.4	19	68.3	4	88.7	2	363.6	0	0.0	0	0.0	451	1.3	1.2, 1.4
All Engineering Occupations Combined	416	37.8	413	30.7	354	32.9	213	31.0	197	46.0	196	56.7	47	65.4	19	81.3	1,855	1.1	1.0, 1.2
All US Navy Occupations Combined*	677	36.6	1,168	31.2	1126	28.7	979	29.0	898	37.5	876	45.6	272	58.1	105	57.7	6,098	1.0	

*Seaman and Airman excluded.

Table A15. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Accidents, Poisonings, and Violence per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1974-79

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	375	211.1	675	211.3	672	188.0	302	128.5	157	128.2	113	117.4	8	48.3	5	101.0	2,307	1.0	0.9, 1.1
EN	142	217.6	258	232.2	176	213.5	114	166.9	92	148.0	56	116.7	11	101.9	2	40.6	851	1.2	1.1, 1.2
MR	27	182.9	73	222.7	62	217.6	37	178.4	19	116.1	11	78.2	4	108.4	1	81.3	234	1.1	1.0, 1.2
BT	326	278.2	479	294.5	284	239.2	135	186.9	103	172.3	57	108.4	9	90.9	1	36.4	1,394	1.4	1.3, 1.4
EM	111	170.3	297	195.4	307	188.5	142	135.7	68	118.1	60	107.1	11	90.2	3	92.6	999	1.0	0.9, 1.0
IC	50	180.0	148	197.0	144	178.9	64	110.7	33	99.2	29	110.9	1	24.6	1	161.3	470	0.9	0.9, 1.0
HT	265	295.7	444	276.3	289	228.4	182	188.5	108	158.0	56	115.0	17	126.7	5	94.3	1,366	1.4	1.3, 1.4
GS	2	500.0	4	261.4	2	122.0	4	266.7	1	78.1	3	340.9	0	0.0	0	0.0	16	1.4	0.8, 2.3
PM	8	287.8	12	198.7	12	249.5	7	220.1	1	45.7	4	179.4	0	0.0	0	0.0	44	1.2	0.9, 1.6
PN	1,417	262.5	1,053	326.3	368	328.3	105	377.3	9	199.6	3	545.5	0	0.0	0	0.0	2,955	1.3	1.3, 1.5
All Engineering Occupations Combined	2,723	247.5	3,443	256.2	2,316	215.3	1,092	158.7	591	138.1	392	113.5	61	84.9	18	77.0	10,636	1.2	1.1, 1.3
All US Navy Occupations Combined*	4,094	221.2	7,881	210.7	6,861	174.7	4,355	129.1	2,625	109.6	1,754	91.2	344	73.5	124	68.2	28,038	1.0	

*Seaman and Airman excluded.

Table B1. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Infectious and Parasitic Diseases per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	57	54.7	79	34.4	82	29.7	55	28.6	15	19.8	4	7.1	1	6.7	0	0.0	293	0.7	0.7, 0.8
EN	5	15.3	36	47.9	21	33.8	10	24.0	5	17.2	3	10.9	1	13.9	0	0.0	81	0.7	0.6, 0.9
MR	4	57.6	12	60.0	5	28.2	0	0.0	2	21.8	0	0.0	0	0.0	0	0.0	23	0.8	0.5, 1.2
BT	13	32.4	59	57.3	46	42.7	23	29.7	8	24.1	10	37.2	0	0.0	0	0.0	159	1.0	0.8, 1.1
EM	13	35.0	27	26.8	36	31.5	14	18.9	10	32.2	7	28.2	4	46.9	0	0.0	111	0.7	0.6, 0.8
IC	2	19.8	29	69.2	15	27.9	5	12.3	5	24.1	0	0.0	0	0.0	1	222.2	57	0.8	0.6, 1.0
HT	22	58.8	50	48.5	23	23.3	25	35.5	13	28.2	5	15.4	2	24.3	1	33.6	141	0.9	0.8, 1.0
GS	4	73.1	4	29.1	5	30.1	5	36.1	1	10.8	0	0.0	1	94.3	0	0.0	20	0.8	0.5, 1.2
PM	0	0.0	1	42.6	1	40.7	2	103.1	0	0.0	0	0.0	0	0.0	0	0.0	4	1.0	0.3, 2.6
FN	146	48.3	100	42.6	39	35.9	13	44.3	1	19.5	1	137.0	0	0.0	0	0.0	300	0.8	0.7, 0.9
All Engineering Occupations Combined	266	46.1	397	43.0	273	31.8	152	27.5	60	23.0	30	15.3	9	16.5	2	13.7	1,189	0.8	0.7, 0.8
All US Navy Occupations Combined*	577	64.1	1,153	50.2	1,172	42.7	799	34.3	376	24.7	185	15.8	63	17.1	21	18.3	4,346	1.0	

*Seaman and Airman excluded.

Table B2. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Malignant Neoplasms per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	0	0.0	9	3.9	8	2.9	6	3.1	7	9.2	9	16.0	7	46.6	4	125.8	50	1.0	0.7, 1.3
EN	1	3.1	1	1.3	1	1.6	3	7.2	1	3.4	2	7.3	0	0.0	0	0.0	9	0.5	0.2, 1.0
MR	0	0.0	0	0.0	1	5.6	0	0.0	2	21.8	1	13.6	0	0.0	0	0.0	4	0.8	0.2, 2.1
BT	1	2.5	2	1.9	5	4.6	2	2.6	1	3.0	3	11.2	4	55.6	0	0.0	18	0.8	0.5, 1.3
EM	2	5.4	2	2.0	4	3.5	1	1.3	1	3.2	9	36.2	3	35.2	1	40.5	23	1.0	0.7, 1.6
IC	0	0.0	0	0.0	0	0.0	2	4.9	0	0.0	5	36.4	3	74.3	0	0.0	10	0.9	0.4, 1.7
HT	1	2.7	4	3.9	7	7.1	2	2.8	5	10.9	2	6.2	0	0.0	0	0.0	21	0.9	0.6, 1.4
GS	0	0.0	0	0.0	0	0.0	1	7.2	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3	0.0, 1.5
PM	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	--	--, --
FN	7	2.3	2	0.9	4	3.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	13	0.6	0.3, 1.0
All Engineering Occupations Combined	12	2.1	20	2.2	30	3.5	17	3.1	17	6.5	31	15.8	17	31.1	5	34.2	149	0.8	0.7, 1.0
All US Navy Occupations Combined*	23	2.6	61	2.7	144	5.2	108	4.6	127	8.3	160	13.7	97	26.3	42	36.6	762	1.0	

*Seaman and Airman excluded.

Table B3. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Benign Neoplasms per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	5	4.8	14	6.1	16	5.8	15	7.8	9	11.9	8	14.2	1	6.7	0	0.0	68	0.9	0.7, 1.1
EN	0	0.0	5	6.7	4	6.4	6	14.4	4	13.8	2	7.3	1	13.9	1	37.6	23	1.0	0.6, 1.5
MR	1	14.4	0	0.0	1	5.6	0	0.0	1	10.9	3	40.9	0	0.0	0	0.0	6	0.9	0.3, 2.0
ET	2	5.0	8	7.8	11	10.2	7	9.1	5	15.0	2	7.4	0	0.0	0	0.0	35	1.1	0.8, 1.5
EM	1	2.7	4	4.0	5	4.4	6	8.1	2	6.4	2	8.1	0	0.0	1	40.5	21	0.7	0.4, 1.0
IC	1	9.9	0	0.0	6	11.2	5	12.3	0	0.0	2	14.6	0	0.0	0	0.0	14	0.9	0.5, 1.6
HT	2	5.3	6	5.8	10	10.1	5	7.1	5	10.9	5	15.4	0	0.0	1	33.6	34	1.0	0.7, 1.4
GS	0	0.0	2	14.6	1	6.0	0	0.0	1	10.8	0	0.0	0	0.0	0	0.0	4	0.7	0.2, 1.9
PH	0	0.0	0	0.0	1	40.7	1	51.5	0	0.0	0	0.0	0	0.0	0	0.0	2	2.2	0.3, 8.0
FN	7	2.3	17	7.2	5	4.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	29	0.6,	0.4, 0.9
All Engineering Occupations Combined	19	3.3	56	6.1	60	7.0	45	8.1	27	10.4	24	12.2	2	3.7	3	20.5	236	0.9	0.8, 1.0
All US Navy Occupations Combined*	55	6.1	141	6.1	221	8.0	170	7.3	157	10.3	157	13.4	52	14.1	26	22.7	979	1.0	

*Seaman and Airman excluded.

Table B4. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Endocrine, Nutritional, and Metabolic Diseases per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	4	3.8	5	2.2	11	4.0	5	2.6	5	6.6	9	16.0	2	13.3	0	0.0	41	0.8	0.6, 1.1
EN	0	0.0	8	10.7	0	0.0	4	9.6	4	13.8	3	10.9	0	0.0	0	0.0	19	1.2	0.7, 1.9
MR	0	0.0	0	0.0	2	11.3	0	0.0	2	21.8	2	27.2	0	0.0	0	0.0	6	1.3	0.5, 2.9
BT	6	14.9	2	1.9	7	6.5	6	7.8	2	6.0	4	14.9	1	13.9	0	0.0	28	1.3	0.9, 1.9
EM	2	5.4	3	3.0	5	4.4	4	5.4	1	3.2	5	20.1	1	11.7	0	0.0	21	1.0	0.6, 1.6
IC	0	0.0	1	2.4	0	0.0	5	12.3	0	0.0	2	14.6	0	0.0	0	0.0	8	0.8	0.3, 1.6
HT	0	0.0	1	1.0	4	4.1	10	14.2	2	4.3	0	0.0	1	12.2	1	33.6	19	0.9	0.5, 1.3
GS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	55.2	1	94.3	0	0.0	4	1.1	0.3, 2.8
PM	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	--	—, —
FM	7	2.3	10	4.3	3	2.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	20	0.8	0.5, 1.3
All Engineering Occupations Combined	19	3.3	30	3.2	32	3.7	34	6.2	16	6.1	28	14.3	6	11.0	1	6.8	166	1.0	0.8, 1.1
All US Navy Occupations Combined*	30	3.3	80	3.5	104	3.9	124	5.3	107	7.0	169	14.4	57	15.4	22	19.2	693	1.0	

*Seaman and Airman excluded.

Table B5. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Blood per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	1	1.0	4	1.7	2	0.7	3	1.6	1	1.3	0	0.0	0	0.0	0	0.0	11	0.6	0.3, 1.1
EM	0	0.0	0	0.0	0	0.0	2	4.8	0	0.0	1	3.6	0	0.0	0	0.0	3	0.6	0.1, 1.7
MR	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	216.6	0	0.0	6	4.1	1.5, 9.0
ET	0	0.0	3	2.9	0	0.0	4	5.2	0	0.0	0	0.0	0	0.0	0	0.0	7	0.9	0.4, 1.9
EM	0	0.0	2	2.0	2	1.7	0	0.0	0	0.0	1	4.0	0	0.0	0	0.0	5	0.7	0.2, 1.6
IC	0	0.0	1	2.4	1	1.9	2	4.9	0	0.0	0	0.0	1	24.8	0	0.0	5	1.4	0.5, 3.3
ET	0	0.0	1	1.0	3	3.0	0	0.0	0	0.0	1	3.1	0	0.0	0	0.0	5	0.7	0.2, 1.5
GS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	55.2	1	94.3	0	0.0	4	1.1	0.3, 2.8
FM	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	—	— —
FN	6	2.0	2	0.9	0	0.0	1	3.4	0	0.0	0	0.0	0	0.0	0	0.0	9	0.7	0.3, 1.4
All Engineering Occupations Combined	7	1.2	13	1.4	8	0.9	12	2.2	1	0.4	3	1.5	7	12.8	0	0.0	51	0.8	0.6, 1.0
All US Navy Occupations Combined*	15	1.7	51	2.2	43	1.6	41	1.8	32	2.1	24	2.0	9	2.4	1	0.9	216	1.0	

*Seamen and Airmen excluded.

Table B6. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Mental Disorders, per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	88	84.4	201	87.6	213	77.2	189	98.4	75	98.9	61	108.4	17	113.1	0	0.0	844	0.9	0.8, 0.9
EN	35	107.3	67	89.2	61	98.1	53	127.3	37	127.2	46	166.8	12	167.1	3	112.8	314	1.1	1.0, 1.2
MR	5	71.9	4	20.0	14	78.9	17	150.2	9	98.1	7	95.4	1	36.1	1	126.6	58	0.8	0.6, 1.0
BT	54	134.5	123	119.5	122	113.4	132	170.7	52	156.4	40	148.8	11	152.8	2	109.3	536	1.3	1.2, 1.4
EM	28	75.3	70	69.5	91	79.5	61	82.2	41	132.2	36	144.9	12	140.8	3	121.5	342	0.9	0.8, 1.0
IC	4	39.7	28	66.8	42	78.3	37	90.9	24	115.4	19	138.3	4	99.0	1	222.2	159	0.8	0.7, 1.0
HT	33	88.1	91	88.3	101	102.5	78	110.8	70	151.9	37	114.0	14	170.3	3	100.7	427	1.0	1.0, 1.1
GS	3	54.8	20	145.6	12	72.2	11	79.4	4	43.4	4	737.0	1	94.3	0	0.0	55	0.8	0.6, 1.1
FM	1	137.0	0	0.0	2	81.3	3	154.6	1	80.6	3	283.0	0	0.0	0	0.0	10	0.9	0.4, 1.7
FN	257	85.0	253	107.8	153	141.0	72	245.3	19	369.6	6	821.9	0	0.0	0	0.0	760	1.1	1.0, 1.2
All Engineering Occupations Combined	508	88.0	857	92.8	811	94.5	653	118.1	332	127.3	259	131.9	72	131.7	13	89.0	3,505	1.0	0.9, 1.1
All US Navy Occupations Combined*	1,026	114.0	2,083	90.7	2,524	91.8	2,637	113.1	1,718	112.8	1,384	118.3	385	104.3	100	87.2	11,857	1.0	

*Seaman and Airman excluded.

Table B7. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Nervous System and Sense Organ Disorders per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	12	11.5	52	22.7	68	24.6	45	23.4	23	30.3	31	55.1	6	39.9	4	125.8	241	1.1	1.0, 1.2
EM	2	6.1	12	16.0	26	41.8	7	16.8	8	27.5	27	97.9	7	97.5	0	0.0	89	1.3	1.0, 1.6
MR	0	0.0	0	0.0	2	11.3	1	8.8	0	0.0	2	27.2	2	72.2	0	0.0	7	0.4	0.2, 0.8
ET	6	14.9	35	34.0	20	18.6	30	38.8	11	33.1	18	66.9	4	55.6	2	109.3	126	1.3	1.1, 1.6
EM	3	8.1	16	15.9	19	16.6	21	28.3	6	19.3	12	48.3	3	35.2	2	81.0	82	0.9	0.7, 1.1
IC	1	9.9	11	26.3	7	13.0	7	17.2	6	28.9	6	43.7	2	49.5	1	222.2	41	0.9	0.7, 1.2
HT	5	13.4	20	19.4	25	25.4	32	45.5	17	36.9	18	55.4	4	48.7	0	0.0	121	1.2	1.1, 1.5
CS	0	0.0	8	58.2	7	48.1	0	0.0	8	86.8	0	0.0	0	0.0	0	0.0	23	1.4	0.9, 2.1
PM	0	0.0	0	0.0	0	0.0	0	0.0	1	80.6	0	0.0	1	181.8	0	0.0	2	0.7	0.1, 2.6
FM	27	8.9	46	19.6	22	20.3	9	30.7	2	38.9	0	0.0	0	0.0	0	0.0	106	0.8	0.7, 1.0
All Engineering Occupations Combined	56	9.6	200	21.6	196	22.8	152	27.5	82	31.0	114	58.1	29	53.2	9	61.6	839	1.2	1.1, 1.3
All US Navy Occupations Combined*	134	14.9	483	21.0	609	22.1	575	24.7	406	26.7	478	40.9	174	47.1	65	56.7	2,924	1.0	

*Seamen and Airmen excluded.

Table B8. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Circulatory Diseases, per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	10	9.6	19	8.3	35	12.7	24	12.5	18	23.7	31	55.1	18	119.8	9	283.0	164	0.9	0.8, 1.0
EN	1	3.1	4	5.3	8	12.9	2	4.8	4	13.8	12	43.5	9	125.3	5	188.0	45	0.7	0.5, 0.9
MR	1	14.4	0	0.0	3	16.9	3	26.5	2	21.8	2	27.2	4	144.4	0	0.0	15	0.8	0.4, 1.2
BT	4	10.0	15	14.6	16	14.9	8	10.3	12	36.1	46	171.1	25	347.2	11	601.1	137	1.6	1.4, 2.0
EM	3	8.1	9	8.9	12	10.5	8	10.8	4	12.9	12	48.3	14	164.3	3	121.5	65	0.8	0.6, 1.0
IC	2	19.8	6	14.3	9	16.8	5	12.3	7	33.7	13	94.6	4	99.0	0	0.0	46	1.1	0.8, 1.5
HT	4	10.7	11	10.7	13	13.2	12	17.0	8	17.4	26	80.1	4	48.7	8	268.5	86	0.9	0.8, 1.2
GS	0	0.0	0	0.0	2	12.0	1	7.2	0	0.0	3	55.2	0	0.0	0	0.0	6	0.4	0.2, 0.9
PM	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	283.0	0	0.0	0	0.0	3	1.0	0.2, 2.9
FN	8	2.6	25	10.7	14	12.9	2	6.8	3	58.4	1	137.0	0	0.0	0	0.0	53	0.7	0.5, 0.9
All Engineering Occupations Combined	33	5.7	89	9.6	112	13.1	65	11.8	58	22.2	149	75.9	78	142.7	36	246.4	620	0.9	0.8, 1.0
All US Navy Occupations Combined*	85	9.4	243	10.6	370	13.5	367	15.8	453	29.8	840	71.8	424	114.9	258	225.0	3,040	1.0	

*Seaman and Airman excluded.

Table B9. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Respiratory System per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	44	42.2	86	37.5	117	42.4	81	42.2	35	46.2	29	51.3	10	66.5	4	125.8	406	0.9	0.8, 1.0
EN	8	24.5	42	55.9	34	54.7	21	50.5	8	27.5	34	123.3	6	83.6	1	37.6	154	1.2	1.0, 1.3
MR	5	71.9	8	40.0	8	45.1	7	61.8	4	43.6	4	54.5	3	108.3	0	0.0	39	1.1	0.8, 1.4
BT	17	42.3	64	62.2	56	52.0	30	38.8	22	66.2	17	63.2	7	97.2	1	54.6	214	1.1	1.0, 1.3
EM	11	29.6	41	40.7	50	43.7	29	39.1	13	41.9	16	64.4	3	35.2	2	81.0	165	0.9	0.8, 1.0
IC	6	59.5	19	45.4	26	48.4	17	41.8	5	24.1	6	43.7	0	0.0	2	444.4	81	0.9	0.7, 1.1
HT	14	37.4	52	50.5	50	50.7	26	36.9	24	52.1	13	40.0	3	36.5	2	67.1	184	1.0	0.8, 1.1
GS	2	36.6	6	43.7	3	18.0	2	14.4	2	21.7	3	55.2	0	0.0	0	0.0	18	0.6	0.3, 0.9
PH	0	0.0	4	170.2	0	0.0	0	0.0	0	0.0	1	94.3	0	0.0	0	0.0	5	1.0	0.3, 2.3
FN	165	54.6	123	52.4	49	54.1	14	47.7	6	116.7	1	137.0	0	0.0	0	0.0	358	1.0	0.9, 1.1
All Engineering Occupations Combined	272	47.1	445	48.2	393	45.8	227	41.1	119	45.6	124	63.2	32	58.5	12	82.1	1,624	1.0	0.9, 1.0
All US Navy Occupations Combined*	491	54.6	1,157	50.4	1,379	50.2	1,019	43.7	620	40.7	514	43.9	176	47.7	80	69.8	5,436	1.0	

*Seamen and Airman excluded.

Table B10. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Digestive System per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	50	48.0	147	64.0	187	67.8	139	72.4	59	77.8	52	92.4	21	139.7	7	220.1	662	1.0	0.9, 1.0
EN	21	64.4	47	62.6	36	57.9	31	74.5	26	89.4	39	141.4	9	125.3	9	338.3	218	1.0	0.9, 1.2
MR	4	57.6	16	80.0	14	78.9	14	123.7	2	21.8	6	81.7	1	36.1	3	379.7	60	1.0	0.8, 1.3
BT	33	82.2	93	90.3	83	77.1	46	59.5	30	90.2	30	111.6	13	180.6	2	109.3	330	1.1	1.0, 1.2
EM	22	59.2	50	49.6	50	43.7	43	57.9	23	74.2	28	112.7	20	234.7	3	121.5	239	0.8	0.7, 0.9
IC	10	99.2	37	88.3	30	55.9	28	68.8	22	105.8	12	87.3	7	173.3	0	0.0	146	1.0	0.9, 1.2
HT	18	48.1	87	84.4	59	59.9	48	68.2	43	93.3	37	114.0	16	194.6	5	167.8	313	1.0	0.9, 1.2
GS	2	36.6	9	65.5	11	66.1	8	57.7	11	119.3	5	92.1	0	0.0	0	0.0	46	0.9	0.7, 1.2
PM	0	0.0	1	42.6	1	40.7	1	51.5	1	80.6	5	471.7	0	0.0	0	0.0	9	1.1	1.0, 2.0
FN	139	46.0	124	52.9	69	63.6	22	75.0	8	155.6	1	137.0	2	2000.0	0	0.0	365	0.8	0.7, 0.9
All Engineering Occupations Combined	299	51.8	611	66.1	540	63.0	380	68.7	225	86.3	215	109.5	89	162.8	29	198.5	2,388	1.0	0.9, 1.0
All US Navy Occupations Combined*	623	69.2	1,565	68.1	1,807	65.7	1,619	69.5	1,235	81.1	1,380	118.0	530	143.6	220	191.8	8,979	1.0	

*Seaman and Airman excluded.

Table B11. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Genitourinary System per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83

Occupational group	Age 17-19 yrs No. of cases	Rate	20-21 yrs No. of cases	Rate	22-24 yrs No. of cases	Rate	25-29 yrs No. of cases	Rate	30-34 yrs No. of cases	Rate	35-39 yrs No. of cases	Rate	40-44 yrs No. of cases	Rate	45+ yrs No. of cases	Rate	All Ages No. of cases	SMR	95% C.I.
MM	16	15.4	46	20.0	47	17.0	45	23.4	28	36.9	17	30.2	9	59.9	1	31.4	209	0.8	0.7, 0.8
EM	9	27.6	13	17.3	21	33.8	7	16.8	16	55.0	9	32.6	0	0.0	2	75.2	77	0.9	0.7, 1.2
MR	1	14.4	2	10.0	1	5.6	0	0.0	3	32.7	0	0.0	1	36.1	0	0.0	8	0.4	0.1, 0.7
BT	11	27.4	38	36.9	32	29.7	29	37.5	8	24.1	13	48.3	6	83.3	1	54.6	138	1.2	1.0, 1.4
HM	8	21.5	17	16.9	25	21.8	19	25.6	9	29.0	8	32.2	0	0.0	1	40.5	87	0.8	0.6, 0.9
IC	1	9.9	11	26.3	14	26.1	12	29.5	8	38.5	4	29.1	0	0.0	0	0.0	50	0.9	0.7, 1.2
HT	5	13.4	23	22.3	22	22.3	31	44.0	15	32.6	22	67.8	5	60.8	1	33.6	124	1.0	0.9, 1.2
CS	3	54.8	6	43.7	6	36.1	0	0.0	3	32.5	0	0.0	0	0.0	0	0.0	18	0.9	0.5, 1.4
PM	0	0.0	0	0.0	1	40.7	0	0.0	1	80.6	0	0.0	0	0.0	0	0.0	2	0.6	0.1, 2.2
FN	49	16.2	50	21.3	22	20.3	4	13.6	3	58.4	1	137.0	0	0.0	0	0.0	129	0.7	0.6, 0.9
All Engineering Occupations Combined	103	17.8	206	22.3	191	22.3	147	26.6	94	36.0	74	37.7	21	38.4	6	41.1	842	0.9	0.8, 0.9
All US Navy Occupations Combined*	224	24.9	596	25.9	741	27.0	727	31.2	557	36.6	468	40.0	148	40.1	58	50.6	3,519	1.0	

*Seamen and Airmen excluded.

Table B12. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Skin per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83

Occupational group	Age 17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	39	37.4	87	37.9	86	31.2	48	25.0	18	23.7	17	30.2	5	33.3	0	0.0	300	1.0	0.9, 1.1
EN	11	33.7	32	42.6	21	33.8	20	48.1	3	10.3	5	18.1	0	0.0	1	37.6	93	1.0	0.8, 1.3
MR	1	14.4	10	50.0	5	28.2	7	61.8	1	10.9	7	95.4	0	0.0	1	126.6	32	1.3	0.9, 1.8
BT	17	42.3	60	58.3	42	39.0	31	40.1	14	42.1	9	33.5	4	55.6	1	54.6	178	1.4	1.2, 1.6
EM	13	35.0	27	26.8	40	35.0	13	17.5	7	22.6	4	16.1	2	23.5	1	40.5	107	0.8	0.7, 1.0
IC	3	29.8	12	28.6	13	24.2	12	29.5	7	33.7	4	29.1	1	24.8	0	0.0	52	0.9	0.7, 1.1
HT	17	45.4	44	42.7	38	38.6	23	32.7	17	36.9	16	49.3	2	24.3	2	67.1	159	1.2	1.1, 1.4
GS	2	36.6	8	58.2	9	54.1	7	50.5	3	32.5	0	0.0	0	0.0	0	0.0	29	1.4	0.9, 2.0
PM	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	--	--, --
FN	89	29.4	71	30.3	33	30.4	7	23.9	2	38.9	0	0.0	0	0.0	0	0.0	202	0.8	0.7, 0.9
All Engineering Occupations Combined	192	33.3	351	38.0	287	33.5	168	30.4	72	27.6	62	31.6	14	25.6	6	41.1	1,152	1.0	0.9, 1.1
All US Navy Occupations Combined*	316	35.1	869	37.8	962	35.0	672	28.8	362	23.8	291	24.9	85	23.0	30	26.2	3,587	1.0	

*Seaman and Airman excluded.

Table B13. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Diseases of the Musculoskeletal System and Connective Tissue per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age 17-19 yrs No. of cases	Rate	20-21 yrs No. of cases	Rate	22-24 yrs No. of cases	Rate	25-29 yrs No. of cases	Rate	30-34 yrs No. of cases	Rate	35-39 yrs No. of cases	Rate	40-44 yrs No. of cases	Rate	45+ yrs No. of cases	Rate	All Ages No. of cases	SMR	95% C.I.
MM	58	55.7	198	86.3	272	98.6	217	113.0	113	149.0	79	140.4	22	146.4	10	314.5	969	1.1	1.1, 1.1
EN	27	82.8	74	98.5	77	123.8	41	98.5	39	134.1	40	145.0	16	222.8	1	37.6	315	1.2	1.1, 1.3
MR	2	28.8	16	80.0	18	101.5	14	123.7	9	98.1	6	81.7	1	36.1	0	0.0	66	0.9	0.7, 1.1
ET	28	69.7	136	132.1	138	128.2	121	156.5	48	144.4	47	174.8	12	166.7	2	109.3	532	1.4	1.3, 1.5
EM	17	45.7	74	73.5	114	99.6	69	92.9	45	145.1	46	185.2	15	176.1	0	0.0	380	1.0	0.9, 1.1
IC	8	79.4	32	76.4	40	74.5	50	122.9	14	67.3	10	72.8	4	99.0	2	444.4	160	0.9	0.8, 1.0
HT	22	58.8	137	132.9	140	142.0	105	149.1	79	171.4	43	132.4	20	243.3	6	201.3	552	1.4	1.3, 1.6
GS	0	0.0	7	50.9	18	108.2	11	79.4	7	75.9	1	18.4	1	94.3	0	0.0	45	0.7	0.5, 0.9
PH	0	0.0	0	0.0	2	81.3	3	154.6	0	0.0	3	283.0	0	0.0	0	0.0	8	0.8	0.3, 1.5
FN	126	41.7	198	84.4	90	82.9	25	85.2	5	97.3	0	0.0	0	0.0	0	0.0	444	0.9	0.8, 0.9
All Engineering Occupations Combined	288	49.9	872	94.4	909	106.0	656	118.7	359	137.6	275	140.1	91	166.5	21	143.7	3,471	1.1	1.0, 1.2
All US Navy Occupations Combined*	531	59.0	1,936	84.3	2,693	98.0	2,385	102.3	1,637	107.5	1,520	129.9	505	136.9	133	116.0	11,340	1.0	

*Seamen and Airmen excluded.

Table B14. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Symptoms and Ill-defined Conditions per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age 17-19 yrs No. of cases	Rate	20-21 yrs No. of cases	Rate	22-24 yrs No. of cases	Rate	25-29 yrs No. of cases	Rate	30-34 yrs No. of cases	Rate	35-39 yrs No. of cases	Rate	40-44 yrs No. of cases	Rate	45+ yrs No. of cases	Rate	All Ages No. of cases	SMR	95% C.I.
MM	27	25.9	57	24.8	53	19.2	32	16.7	14	18.5	38	67.5	9	59.9	4	125.8	234	0.9	0.8, 1.0
EN	4	12.3	8	10.7	12	19.3	11	26.4	10	24.4	18	65.3	2	27.9	1	37.6	66	0.8	0.6, 1.0
MR	2	28.8	2	10.0	2	11.3	1	8.8	4	43.6	5	68.1	1	36.1	1	126.6	18	0.8	0.5, 1.2
BT	17	42.3	25	24.3	33	30.7	23	29.7	26	78.2	22	81.8	4	55.6	3	163.9	153	1.4	1.2, 1.6
EM	6	16.	16	15.9	27	23.6	5	6.7	4	12.9	9	36.2	5	58.7	2	81.0	74	0.7	0.5, 0.8
IC	2	19.8	7	16.7	12	22.4	13	31.9	6	28.9	6	43.7	1	24.8	1	222.2	48	0.9	0.7, 1.2
HT	5	13.4	23	22.3	27	27.4	10	14.2	25	54.3	14	43.1	6	73.0	0	0.0	110	1.0	0.8, 1.2
GS	1	18.3	4	29.1	2	12.0	3	21.6	0	0.0	1	18.4	1	94.3	0	0.0	12	0.6	0.3, 1.1
PM	0	0.0	0	0.0	2	81.3	1	51.5	1	80.6	0	0.0	0	0.0	0	0.0	4	1.2	0.3, 3.2
FN	43	14.2	46	19.6	24	22.1	3	10.2	2	38.9	1	137.0	1	1000.0	0	0.0	120	0.6	0.5, 0.8
All Engineering Occupations Combined	107	18.5	188	20.3	194	22.6	102	18.5	92	35.3	114	58.1	30	54.9	12	82.1	839	0.9	0.8, 0.9
All US Navy Occupations Combined*	281	31.2	547	23.8	645	23.5	527	22.6	521	34.2	609	52.1	221	59.9	85	74.1	3436	1.0	

*Seaman and Airman excluded.

Table B15. Age Specific Total Hospitalization Rates and Standard Morbidity Ratios (SMR) for Accidents, Poisonings, and Violence per 10,000 Person-Years, Active Duty Enlisted Naval Personnel, Engineering Occupations, White Males, 1980-83.

Occupational group	Age																	
	17-19 yrs		20-21 yrs		22-24 yrs		25-29 yrs		30-34 yrs		35-39 yrs		40-44 yrs		45+ yrs		All Ages		
	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	Rate	No. of cases	SMR	95% C.I.
MM	196	188.1	453	197.4	459	166.3	258	134.3	77	101.5	48	85.3	12	79.8	3	94.3	1506	1.0	0.9, 1.0
EN	72	220.8	170	226.4	139	223.4	63	151.4	36	123.8	38	137.8	8	111.4	3	112.8	529	1.2	1.1, 1.3
MR	16	230.2	42	210.1	31	174.7	30	265.0	5	54.5	7	95.4	1	36.1	0	0	132	1.1	0.9, 1.3
BT	125	311.3	300	291.3	314	291.7	133	172.0	50	150.4	38	141.3	3	41.7	1	54.6	964	1.5	1.4, 1.6
EM	59	158.7	174	172.8	182	159.0	108	145.5	41	132.2	24	96.6	2	23.5	2	81.0	592	0.9	0.8, 1.0
IC	30	297.6	68	162.3	77	143.5	44	108.1	20	96.2	9	65.5	3	74.3	1	22.2	252	0.9	0.8, 1.0
HT	111	296.5	272	263.9	249	252.6	128	181.8	67	145.4	50	154.0	6	73.0	4	134.2	887	1.4	1.3, 1.5
GS	7	128.0	26	189.2	29	174.4	29	209.2	15	162.7	5	92.1	0	0.0	0	0.0	111	1.1	6.9, 1.3
PM	0	0.0	4	170.2	6	143.9	6	309.3	2	161.3	3	283.0	0	0.0	0	0.0	21	1.3	0.8, 2.0
FN	507	167.7	456	194.4	215	198.1	54	184.0	12	233.5	4	547.9	0	0.0	0	0.0	1248	0.9	0.9, 1.0
All Engineering Occupations Combined	1,123	194.6	1,965	212.7	1,701	198.3	853	154.3	325	124.6	226	115.1	35	64.0	14	95.8	6,242	1.1	1.0, 1.1
All US Navy Occupations Combined*	1,998	222.0	4,655	202.6	4,865	177.0	3,171	136.0	1,614	106.0	968	82.7	263	71.3	73	63.6	17,607	1.0	

*Seaman and Airman excluded.

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This prospective study assessed the risk of occurrence of disease and injury in active-duty enlisted Navy engineering personnel compared to the total Navy during two time periods, 1974-79 and 1980-83. All white male active-duty enlisted personnel in 10 Navy engineering occupations were identified from the NHRC Career History File for the two time periods. Hospitalizations were identified from the NHRC Medical History File and diagnoses were grouped into 15 disease and injury categories. Standardized Morbidity Ratios (SMRs) were calculated as a summary measure of risk to minimize the effects of differing age-distributions in the occupations under study. Significance testing was performed using the Poisson distribution.

All Navy engineering occupations combined had about 20% higher risks for nervous system disorders (principally hearing loss), musculoskeletal disorders, and accidents. This excess was statistically significant, and a large proportion of this excess was contributed by one occupational group: Boiler Technicians. Other high risk occupations were Hull Maintenance Technicians, Enginemen, and Machinist's Mates. Results of this (Cont'd on reverse side)

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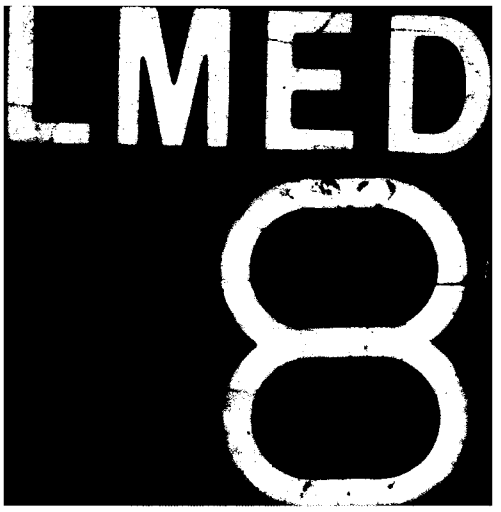
study indicate that improvements in Navy engineering environments should be primarily directed toward Boiler Technicians, who were the major contributor to excess disease and injury observed in Navy engineering personnel.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